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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/568,272	09/21/2006	Eiko Tagusari	060129	3104

21874 7590 04/07/2011

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EXAMINER	
CLINE JR, JAMES	
ART UNIT	PAPER NUMBER
4187	
MAIL DATE	DELIVERY MODE
04/07/2011	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/568,272	TAGUSARI, EIKO	
	Examiner	Art Unit	
	JAMES L. CLINE JR.	4187	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *15 February 2006* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *02/15/2006, 11/15/2006*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The drawings are objected to because of the following informalities:

The exploded view of Fig. 1 is not properly shown. Pursuant to 37 CFR 1.84(h)(1), when an exploded view is shown in a figure which is on the same sheet as another figure, the exploded view should be placed in brackets.

An apparent mistake exists in the reference terms of Fig. 5. Fig. 5 appears to have mistakenly included the term "M Fatened member" instead of "M Fastened member," as used in Fig. 1 and in the specification.

The three portions of Fig. 5 are not properly identified. They should be separately labeled "Fig. 5(a)," "Fig. 5(b)," and "Fig. 5(c)" respectively.

An apparent mistake exists in the reference terms of Fig. 8. Fig. 8 appears to have mistakenly included the term "12 Thread head," which is not used in either the claims or the specification. Due to inconsistent terms for the structural element associated with reference numeral 12 in the claims and the specification, the proper term to be used in Fig. 8 is unclear.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the

drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

2. Applicant is reminded of the proper language and format for an abstract of the disclosure. The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length because the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

3. The abstract of the disclosure is objected to because it exceeds the maximum 150 word limit, takes the form often used in patent claims, and includes the legal phraseology of "comprises." Appropriate correction is required.

4. The disclosure is objected to because of the following informalities:

The disclosure contains several grammatical mistakes, particularly with respect to verb tenses. For example, page 2, lines 11-13 state: "this prior art nut had a problem that the nut is not suitable for fastening a heavy iron frame or the like."

The disclosure contains mandatory language in several instances where permissive language appears to be proper. For example, page 6, lines 3-4 state: "the fastening nut (7) is connected to the side of the projections (5) . . . ." Based on the remainder of the disclosure, it appears that a connected fastening nut is required under only one embodiment of the invention. Accordingly, the disclosure should state: "the fastening nut (7) may be connected to the side of the projections (5) . . . ."

The disclosure is inconsistent in its form of using reference numerals. The reference numerals used in the Summary of the Invention are enclosed in parentheses, but the reference numerals used in the Description of the Preferred Embodiments are not in parenthetical form. The form of using reference numerals should be consistent.

The disclosure is inconsistent in referencing the invention's "plurality of projections." After introducing the "plurality of projections (5)" on page 5, line 10, the disclosure often refers to "the projection" when explaining a characteristic or feature that appears to be common to all of the projections in a given embodiment. For example, page 6, line 9 states: "The height of the projection (5) may be equal to or more than 30% of a length of the nut body (2) . . . ." When discussing the projections, the disclosure should refer to "the plurality of projections (5)" or "the projections (5)."

The disclosure contains an apparent mistake in citing a reference numeral. Page 5, line 11 recites "the groove (3)" instead of "the groove (30)."

The disclosure fails to include reference numerals for structural elements in certain instances. For example, page 6, line 2 recites a "threaded part" without its reference numeral (9).

The disclosure fails to sufficiently identify structural elements in certain instances. For example, page 11, line 24 recites "the nut" instead of "the nut body (2)."

The disclosure contains a mistake in describing Fig. 9. Page 9, line 4 states that Fig. 9 is "in section," but the figure is not a section view.

The disclosure is inconsistent in referencing a structural element of the invention. After introducing a "screw thread (12)" on page 5, line 26, the disclosure recites inconsistent terms for the structural element associated with reference numeral 12. For example, page 14, line 25 recites a "screw head (12)." The claims also use the term "screw head." However, as discussed above, Fig. 8 includes the term "12 thread head." The application should use the same term consistently throughout the specification, claims, and drawings.

Appropriate correction of these informalities is required.

Claim Objections

5. Claims 1-20 are objected to because of the following informality: The claims are inconsistent in referencing a structural limitation in plural form and singular form. Claim 1, line 4 first recites the limitation "a plurality of projections." Claim 1 later recites "each projection" on line 6 and "the projection" on line 10. Claims 2-20 recite "said projection." The recitation of the limitation "projection" in the singular form lacks antecedent basis and clarity. When addressing a further limitation affecting all of the projections, a claim should refer to "said plurality of projections" or "said projections" or "each of said projections." A claim should not refer to a single projection unless the projections have been separately identified in the claims.

6. Claim 1 is objected to because of the following informalities:

The claim language contains an apparent mistake in reciting a limitation that lacks antecedent basis and clarity. Claim 1, line 4 recites "one seat surface." In interpreting the claim, use of the word "one" preceding a limitation is equivalent to use of the word "the." For the purposes of the Office action, claim 1 has been treated on the merits as if line 4 recited "a seat surface."

The claim language contains inconsistent use of the words "the" and "said" preceding a structural limitation. For example, a structural limitation "nut body" is recited as "the nut body" on line 6, "said nut body" on line 8, "the nut body" on line 8, and "said nut body" on line 13. Consistent wording would assist in the clarity of the claim.

7. Claim 7 is objected to because of the following informality: An apparent mistake exists in the claim language. Claim 7, line 1 recites the preamble: "A lock nut according to or claim 2." The preamble appears to have mistakenly included the word "or." Based on the nature of the amendments to the claims, claim 7 does not appear to be an attempted multiple dependent claim. Appropriate correction of the claim language is required. For the purposes of the Office action, claim 7 has been treated on the merits as if the preamble recited "A lock nut according to claim 2."

Claim Rejections - 35 USC § 112

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. **Claims 1-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.**

10. Claim 1, lines 3-5 recite: "a groove (30) formed continuously and concentrically from a circumferential edge of a threaded hole (4) of one seat surface (3) and a plurality of projections (5) formed in said groove (30)." The meaning of the word "continuously" in the claim is unclear. Although "continuously" has an ordinary and customary meaning, that meaning is inconsistent with the structure disclosed in the drawings. Figs. 1-4 show a groove that is divided into multiple sections, separated by the plurality of projections. Thus, the groove is not formed "continuously," according to the ordinary meaning of the term. Additionally, although applicant is entitled to be his own lexicographer, the term "continuously" is not specifically defined in the disclosure.

11. Claim 1, lines 6-8 recite: "each projection (5) . . . has an outer side face (31) extending in a tilted manner from the border between the seat surface (3) and the groove (30) of said nut body (2)." The respective meanings of the words "tilted" and "border" in the claim are unclear. Identification of the "border" is unclear because the groove does not appear to exist in the regions where the projections are located. Additionally, if the "border" is an edge created by the intersection of the seat surface and the groove, it is unclear how the outer side face can be "tilted" relative to the edge from which it extends. Finally, it is unclear how a curved surface, the outer side face, can be "tilted." Such a relationship is ordinarily used with respect to flat surfaces or straight lines.

12. Claim 1, lines 1-2 recite the preamble: "A lock nut (1) for preventing a fastening nut (7) fastened against a bolt (6) from being loosened." On lines 10-13, the body of claim 1 recites: "wherein a depth of said groove (30) is made such that the projection (5) crushed when said nut body (2) is threadably engaged with the bolt (6) and fastened against it by the fastening nut (7)

does not enter the space between a seat surface (8) of said fastening nut (7) and the seat surface (8) of said nut body (2)." Based on the conflicting language of the preamble and the body, it is unclear whether applicant intended for the claimed invention to include the bolt and the fastening nut. For the purposes of the Office action, claim 1 has been treated on the merits as if the claimed invention includes the bolt and the fastening nut. Even if applicant did not intend this relationship, the below prior art rejections are nonetheless applicable.

Claim Rejections - 35 USC § 103

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

14. Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moroi et al. (U.S. Patent No. 6,113,329) in view of Heighberger (U.S. Patent No. 4,069,854).

15. Regarding claim 1, Moroi et al. discloses a similar lock nut device (1) (Figs. 1-9 of Moroi et al.), the device comprising:

- a nut body (2) having a threaded hole (4), a seat surface (3), and a plurality of projections (5) formed on said seat surface;
- wherein each of said projections is made from the same material (Fig. 4) as that of said nut body and has an inner side face (Fig. 4) being an extension of an inner face (Fig. 4) of said threaded hole; and
- wherein said projections are crushed (Figs. 5(c) and 6) when said nut body is threadably engaged with a bolt (6) and fastened against it by a fastening nut (7).

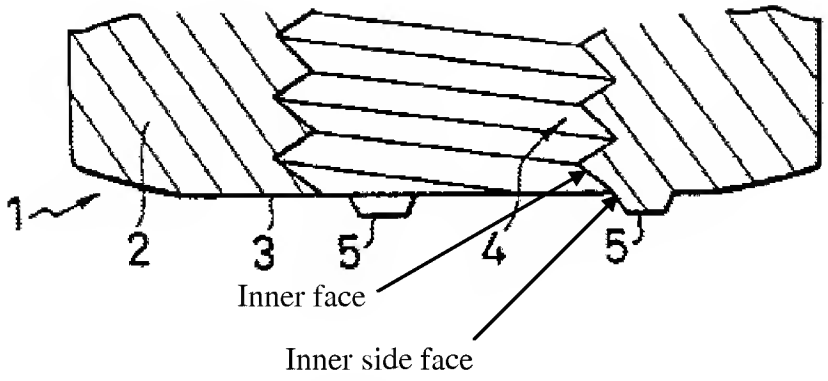

Fig. 4

of Moroi et al.

16. However, Moroi et al. fails to disclose a groove formed continuously and concentrically from a circumferential edge of a threaded hole of a seat surface of a nut body; a plurality of projections formed in said groove, each of said projections having an outer side face extending in a tilted manner from the border between the seat surface and the groove of said nut body toward a center of the nut body; and a depth of said groove such that the projection crushed when said nut body is threadably engaged with a bolt and fastened against it by a fastening nut does not enter the space between a seat surface of said fastening nut and the seat surface of said nut body.

17. Heighberger teaches a lock nut device (Figs. 1-5 of Heighberger) including a groove (Fig. 2) formed continuously and concentrically from a circumferential edge of a threaded hole (3) of a seat surface (Fig. 2) of a nut body (1); a plurality of projections (6) formed in said groove, each of said projections having an outer side face (Fig. 1) extending in a tilted manner from the border between the seat surface and the groove of said nut body toward a center of the nut body; and a depth of said groove such that the projection crushed when said nut body is threadably engaged with a bolt (7) and fastened against it by a fastening nut (20) does not enter the space (Fig. 5)

between a seat surface (19) of said fastening nut and the seat surface of said nut body; for the purpose of controlling deformation of the projections toward the bolt (C3 / L13-21; L31-38).

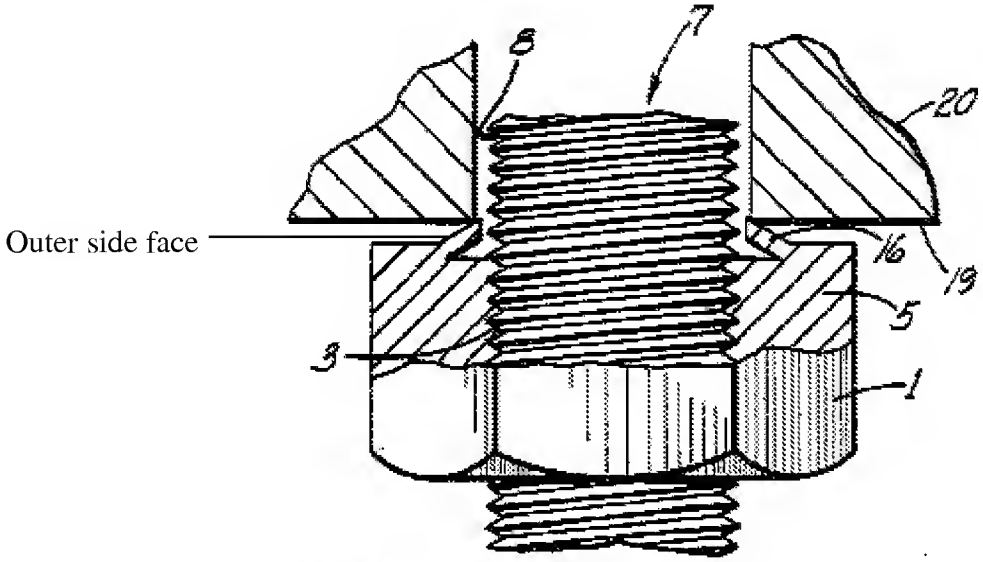

Fig. 1 of Heighberger

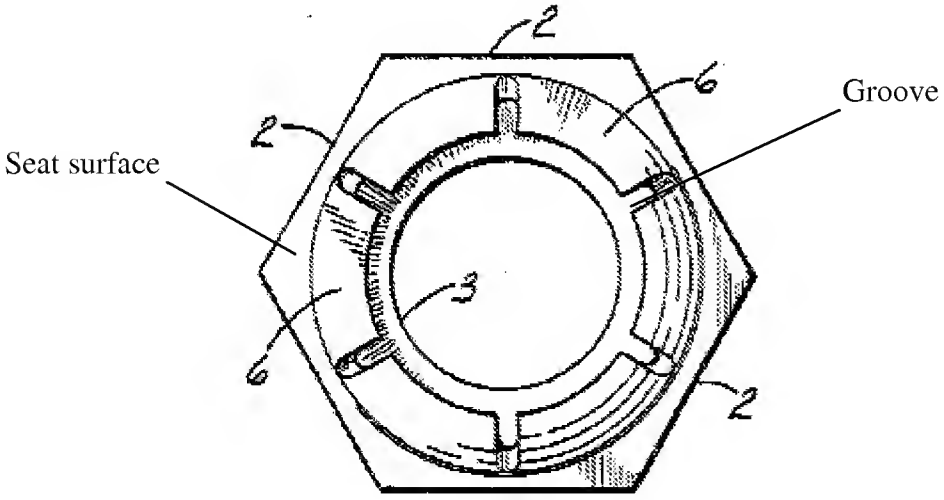

Fig. 2 of Heighberger

18. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the lock nut of Moroi et al. to have a groove formed continuously and concentrically from a circumferential edge of a threaded hole of a seat surface of a nut body; a plurality of projections formed in said groove, each of said projections having an outer side face extending in a tilted manner from the border between the seat surface and the groove of said nut body toward a center of the nut body; and a depth of said groove such that the projection crushed when said nut body is threadably engaged with a bolt and fastened against it by a fastening nut does not enter the space between a seat surface of said fastening nut and the seat surface of said nut body, as taught by Heighberger, for the purpose of controlling deformation of the projections toward the bolt.

19. Regarding claim 2, Moroi et al. as modified above further discloses a lock nut device wherein an extremity of said projection is formed with a claw (11) directed toward a center of said nut body.

20. Regarding claims 3 and 7, Moroi et al. as modified above further discloses a lock nut device wherein said projection has a screw head (12) being formed on said inner side face and threadably engaged with a threaded part of said bolt.

21. Regarding claims 4, 8, 9, and 10, Moroi et al. as modified above further discloses a lock nut device wherein said fastening nut is connected (Fig. 9; C6 / L4-25) to the side of said projections of said nut body; and wherein a height of said projection is set so that a lead angle and a pitch angle of the threaded hole of said nut body coincide (C6 / L26-38) with a lead angle and a pitch clearance of a threaded hole of said fastening nut.

22. Regarding claims 5, 11, 12, 13, 14, 15, 16, and 17, Moroi et al. as modified above discloses the claimed invention except for the size limitation that the height of said projections is equal to or more than 30% of a length of said nut body in the direction of its central axis. It would have been an obvious matter of design choice to select the height of said projections to be equal to or more than 30% of a length of said nut body in the direction of its central axis, because such a modification would have involved a mere change in the size of an element. A change in size is generally recognized as being within the level of ordinary skill in the art. In re Rose, 105 USPQ 237 (CCPA 1955).

23. Regarding claims 6, 18, 19, and 20, Moroi et al. as modified above further discloses a lock nut device wherein said projection has a tapered mountain-shaped form (Figs. 1, 2, 4, 7, and 8).

Conclusion

24. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James Cline whose telephone number is 571-270-3069. The examiner can normally be reached on Monday-Friday, 7:30-5:00, with alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Victor Batson can be reached on 571-272-6987. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Gene Crawford/
Supervisory Patent Examiner, Art Unit 3651

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Examiner, Art Unit 4187